

Hot Tips: Public Health Advisory #131 Date: 7/5/2022

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Increase in Parechovirus Infections in Very Young Infants

Pediatric infectious disease specialists across the nation are noticing a concerning increase in severe parechovirus infections; a limited sampling of specialists reported 67 such heretofore unusual infections over the last several months. Infants from 5 to 90 days of age are presenting for hospitalization and sometimes intensive care. Common symptoms of parechovirus infection may include fever, tachycardia, dyspnea, poor feeding, diarrhea, lethargy, irritability, mottled skin, diffuse rash ("red, hot and angry" baby) and a distinctive "mittens and booties" syndrome. Severe infections that require intensive care management are more common in the youngest of these infants (aged <3 weeks). The more severely ill infants may present with a sepsis picture, including hypotension and hypothermia, myocarditis, dyspnea, apnea, encephalitis, meningitis, and seizures. Affected infants tend to be full term and born to mothers who were afebrile in the peripartum period. Infants hospitalized in the ICU were often discharged from the hospital in healthy condition after several days. Longer-term neurologic sequelae have been observed. Fatalities have been rare.

The first parechoviruses were isolated in 1956 and recognized as a new genus in 1996. Human parechovirus was found in at least 20 U.S. infants in 2014. The 2014 outbreak is thought to be linked to maternal-fetal transmission although almost half of all cases had ill household contacts under 11 years of age. Currently, parechovirus infections are being reported across the United States with most of these cases having occurred since March of this year. Opinion is starting to form that waves of parechovirus infections will be seen every 2 years.

Several journal articles have reported findings indicating that parechovirus may be associated with congenital malformations, intrauterine fetal death, and sudden infant death syndrome. Studies are also being conducted to investigate the possible connection of the virus to diabetes, neurological and other illnesses in humans.

The virus is most likely to be detected in spinal fluid and feces. Stool specimens may remain positive for a median duration of 51 to 58 days. Blood may be positive as well. Specimens from non-sterile body sites are also often positive. MRI findings may include confluent regions of diffusion restriction involving the deep white matter of both cerebral hemispheres, corpus callosum and internal capsule with associated patchy T1 and T2 signal with relative sparing of

occipital white matter, thalamus, basal ganglia and the infratentorial regions. Follow up imaging usually shows disappearance of the lesions without white matter loss.

Lymphopenia is a common laboratory finding. When there is evidence of CNS involvement, the spinal fluid is most often positive for parechovirus by PCR but usually negative for cells, glucose and protein. When pleocytosis is present it is usually mild.

Diagnosis is made by parechovirus PCR, usually obtained through the meningitis-encephalitis BioFire multiplex PCR or through utilization of the GenMark Diagnostics syndromic panel. Some hospital laboratories in Ventura County (e.g., Ventura County Medical Center) are capable of running the meningitis-encephalitis BioFire multiplex PCR. For hospitals that do not have the BioFire test available, they or the Ventura County Public Health Laboratory can forward the sample to the Viral and Rickettsial Diseases Laboratory (the VRDL State Laboratory) which has a parechovirus PCR test. Quest Diagnostics Laboratory utilizes the GenMark Diagnostics syndromic panel. ARUP Laboratory uses its own laboratory-developed parechovirus test.

There are no effective antiviral therapies. Intravenous Immune Globulin (IGN) has been used in some published case reports of neonates with severe parechovirus infections. Treatment is primarily supportive. Management of complications may be required. Some infants with severe parechovirus infection may have adverse neurodevelopment outcomes including cerebral palsy, central visual impairment and gross motor development deficit.

In infants under 3 months of age presenting with symptoms of sepsis or meningitis, consider parechovirus and send samples of CSF, blood and stool for PCR testing.

In order to support countywide monitoring of cases, please notify Ventura County Public Health's Communicable Diseases section of suspected or confirmed cases of parechovirus via telephone (805-981-5201) or by Confidential Morbidity Report (CMR).

This bulletin is intended to improve the public health in our county by keeping physicians and nurses informed of noteworthy diagnoses, disease trends, and other events of medical interest. Another goal of a public health department is to educate. We hope that you will use this information to increase your awareness. Please allow us to continue in our role of speaking to the press so that we may maximize the educational message to the benefit of all citizens of Ventura County.